

DOCKET NO.

S/267 DIV

CONFIRM IN NO.

4529

APPLICANT

Daniel Aeschlimann et al.

APPLICATION NO.

10/680,000

FILED

10/6/2003

RECEIPT IS HEREBY ACKNOWLEDGED OF THE

Statement Under 37 CFR Sections 1.97 and 1.56 (in duplicate); PTO-1449 (w/o references)

DATED

03/08/04

FILED IN CONNECTION WITH THE ABOVE CASE.

COMMISSIONER FOR PATENTS

SCR 003352.0009





S/267 DIV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Daniel Aeschlimann et al.  
Application No. : 10/680,000  
Filed : October 6, 2003  
Confirmation No. : 4529  
For : FUNCTIONALIZED DERIVATIVES OF HYALURONIC ACID,  
FORMATION OF HYDROGELS IN SITU USING SAME, AND  
METHODS FOR MAKING AND USING SAME  
Group Art Unit : 1623  
Examiner : Not Yet Assigned

New York, New York  
March 8, 2004

Hon. Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

STATEMENT UNDER 37 C.F.R. §§ 1.97 AND 1.56

Sir:

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), applicants make of record the  
following documents:

UNITED STATES PATENTS

4,517,295	Bracke et al.
4,582,865	Balazs et al.
4,703,108	Silver et al.
4,713,448	Balazs et al.
4,780,414	Nimrod et al.
4,784,659	Fleckenstein et al.
4,801,539	Akasaka et al.
4,897,349	Swann et al.
4,957,744	della Valle et al.
4,970,298	Silver et al.

5,017,229	Burns et al.
5,166,331	della Valle et al.
5,270,300	Hunziker
5,316,926	Brown et al.
5,336,767	della Valle et al.
5,356,883	Kuo et al.
5,368,858	Hunziker
5,413,791	Rhee et al.
5,466,462	Rosenthal et al.
5,468,787	Braden et al.
5,502,081	Kuo et al.
5,512,301	Song et al.
5,527,893	Burns et al.
5,565,210	Rosenthal et al.
5,567,806	Abdul-Malak et al.
5,616,568	Pouyani et al.
5,652,347	Pouyani et al.
5,693,341	Schroeder et al.
5,700,476	Rosenthal et al.
5,769,899	Schwartz et al.

#### FOREIGN PATENT DOCUMENTS

FR 96-12200 (published October 7, 1996)  
 WO 90/06767 (published June 28, 1990)  
 WO 96/15888 (published May 30, 1996)  
 WO 97/45532 (published December 4, 1997)  
 WO 97/18244 (published May 22, 1997)

#### OTHER REFERENCES

Adams, M.E., "Viscosupplementation as articular therapy," in *The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives*, T.C. Laurent (ed.), Portland Press, London, pp. 243-253 (1998).

Amiel et al., "The chondrogenesis of rib perichondrial grafts for repair of full thickness articular cartilage defects in a rabbit model: A one year postoperative assessment." *Connect. Tissue Res.* 18, pp. 27-39 (1988).

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Homminga et al., "Repair of articular defects by perichondrial grafts: Experiments in the rabbit," *Acta Orthop. Scand.*, pp. 326-329 (1989).

Hunziker and Rosenberg, "Repair of Partial-Thickness Defects in Articular Cartilage: Cell Recruitment from the Synovial Membrane," *J. Bone Joint Surg.*, 78-A, pp. 721-733 (1996).

Itay et al., "Use of Cultured Embryonal Chick Epiphyseal Chondrocytes as Grafts for Defects in Chick Articular Cartilage," *Clin. Orthop.*, 220, pp. 284-303 (1987).

Kalb and Cowley, "Hope for Damaged Joints," *Newsweek*, p. 55, January 29, 1996.

King et al., "Beneficial actions of exogenous hyaluronic acid on wound healing," *Surgery*, 109, pp. 76-84 (1991).

Knudson, C.B., "Hyaluronan Receptor-directed Assembly of Chondrocyte Pericellular Matrix," *J. Cell Biol.*, 120, pp. 825-834 (1993).

Knudson and Knudson, "Hyaluronan-binding proteins in development, tissue homeostasis, and disease," *FASEB J.*, 7, pp. 1233-1241 (1993).

Kuettner et al., "Synthesis of Cartilage Matrix by Mammalian Chondrocytes in vitro. I. Isolation, Culture Characteristics, and Morphology," *J. Cell Biol.*, 93, pp. 743-750 (1982).

Kuo et al., "Chemical Modification of Hyaluronic Acid by Carbodiimides," *Bioconjugate Chem.*, 2, pp. 232-241 (1991).

Kurzer and Douraghi-Zadeh, "Advances in the Chemistry of Carbodiimides," *Chem. Rev.*, 67, pp. 107-152 (1967).

Kvam et al., "Purification and Characterization of Hyaluronan from Synovial Fluid," *Anal. Biochem.*, 211, pp. 44-49 (1993).

Larsen, N.E., "Management of adhesion formation and soft tissue augmentation with viscoelastics: hyaluronan derivatives," in *The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives*, T.C. Laurent (ed.), Portland Press, London, pp. 267-281 (1998).

Larsen and Balazs, "Drug delivery systems using hyaluronan and its derivatives," *Adv. Drug Delivery Rev.*, 7, pp. 279-293 (1991).

Laurencin et al., "Poly(anhydride) administration in high doses in vivo: Studies of biocompatibility and toxicology," *J. Biomed. Mat. Res.*, 24, pp. 1463-1481 (1990).

Laurent and Fraser, "Hyaluronan," *FASEB J.*, 6, pp. 2397-2404 (1992).

Maleski and Knudson, "Hyaluronan-Mediated Aggregation of Limb Bud Mesenchyme and Mesenchymal Condensation during Chondrogenesis," *Exp. Cell Res.*, 225, pp. 55-66 (1996).

McPherson et al., "Collagen Fibrillogenesis In Vitro: A Characterization of Fibril Quality as a Function of Assembly Conditions," *Collagen Rel. Res.*, 5, pp. 119-135 (1985).

Morgelin et al., "The cartilage proteoglycan aggregate: assembly through combined protein-carbohydrate and protein-protein interactions," *Biophys. Chem.*, 50, pp. 113-128 (1994).

Nakahara et al., "Culture-Expanded Periosteal-Derived Cells Exhibit Osteochondrogenic Potential in Porous Calcium Phosphate Ceramics In Vivo," *Clin. Orthop.*, 276, pp. 291-298 (1992).

Noble et al., "Induction of inflammatory gene expression by low-molecular-weight hyaluronan fragments in macrophages," in *The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives*, T.C. Laurent (ed), Portland Press, London, pp. 219-225 (1998).

O'Driscoll et al., "Durability of Regenerated Articular Cartilage Produced by Free Autogenous Periosteal Grafts in Major Full-Thickness Defects in Joint Surfaces under the Influence of Continuous Passive Motion," *J. Bone Joint Surg.*, 70-A, pp. 595-606 (1988).

Ogamo et al., "Preparation and properties of fluorescent glycosamino-glycuronans labeled with 5-aminofluorescein," *Carbohydr. Res.*, 105, pp. 69-85 (1982).

Parameswaran et al., "Labeling of  $\epsilon$ -lysine cross-linking sites in proteins with peptide substrates of factor XIIIa and transglutaminase," *Proc. Natl. Acad. Sci. U.S.A.*, 87, pp. 8472-8475 (1990).

Pouyani et al., "Functionalized Derivatives of Hyaluronic Acid Oligosaccharides: Drug Carriers and Novel Biomaterials," *Bioconjugate Chem.*, 5, pp. 339-347 (1994).

Prestwich et al., "Chemical modification of hyaluronic acid for drug delivery, biomaterials and biochemical probes," in *The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives*, T.C. Laurent (ed), Portland Press, London, pp. 43-65 (1998).

Richards and Knowles, "Glutaraldehyde as a Protein Cross-linking Reagent," *J. Mol. Biol.*, 37, pp. 231-233 (1968).

Robinson et al., "Regenerating Hyaline Cartilage in Articular Defects of Old Chickens Using Implants of Embryonal Chick Chondrocytes Embedded in a New Natural Delivery Substance," *Calcif. Tissue Int.*, 46, pp. 246-253 (1990).

Sampath et al., "Recombinant Human Osteogenic Protein-1 (hOP-1) Induces New Bone Formation in Vivo with a Specific Activity Comparable with Natural Bovine Osteogenic Protein and Stimulates Osteoblast Proliferation and Differentiation in Vitro," *J. Biol. Chem.*, 267, pp. 20352-20362 (1992).

Scott, J.E., "Chemical morphology of hyaluronan," in *The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives*, T.C. Laurent (ed), Portland Press, London, pp. 7-15 (1998).

Sheng et al., "A Specific Quantitative Colorimetric Assay for L-Asparagine," *Anal. Biochem.*, 211, 242-249 (1993).

Shortkroff et al., "Healing of chondral and osteochondral defects in a canine model: the role of cultured chondrocytes in regeneration of articular cartilage," *Biomaterials*, 17, pp. 147-154 (1996).

Strachan et al., "Hyaluronate in rheumatology and orthopaedics: Is there a role?" *Ann. Rheum. Dis.*, 49, 949-952 (1990).

Vercruysse et al., "Synthesis and in vitro Degradation of New Polyvalent Hydrazide Cross-Linked Hydrogels of Hyaluronic Acid," *Bioconjugate Chem.*, 8, pp. 686-694 (1997).

Vilaseca et al., "Protein Conjugates of Defined Structure: Synthesis and Use of a New Carrier Molecule," *Bioconjugate Chem.*, 4, pp. 515-520 (1993).

Wakitani et al., "Mesenchymal Cell-Based Repair of Large, Full-Thickness Defects of Articular Cartilage," *J. Bone Joint Surg.*, 76-A, pp. 579-592 (1994).

Wakitani et al., "Repair of rabbit articular surfaces with allograft chondrocytes embedded in collagen gel," *J. Bone Joint Surg.*, 71-B, pp. 74-80 (1989).

Wang et al., "Recombinant human bone morphogenetic protein induces bone formation," *Proc. Natl. Acad. Sci. U.S.A.*, 87, pp. 2220-2224 (1990).

Weiss, C., "Viscoseparation and viscoprotection as therapeutic modalities in the musculoskeletal system," in *The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives*, T.C. Laurent (ed), Portland Press, London, pp. 255-265 (1998).

Wong, S.S., "Chemistry of protein conjugation and crosslinking," CRC Press, Inc., Boca Raton, FL, p. 27 (1993).

Yang and Moses, "Transforming Growth Factor  $\beta$ 1-induced Changes in Cell Migration, Proliferation, and Angiogenesis in the Chicken Chorioallantoic Membrane," *J. Cell Biol.*, 111, pp. 731-741 (1990).

All documents cited herein were either previously submitted by applicants in an Information Disclosure Statement or cited by the Examiner in parent United States Application No. 09/156,829 ("the parent application"), from which the above-identified application claims priority. Pursuant to 37 C.F.R. § 1.98(d), applicants have not enclosed copies of the documents. However, applicants stand ready to provide copies at the Examiner's request.

This Statement is submitted more than three months from the application filing date but before the mailing date of the first Office Action on the merits. In accordance with 37 C.F.R. § 1.97, submission of this Statement requires no fee. However, if for any reason a fee is due, the Director is hereby authorized to charge payment of any fees required in connection with this Information Disclosure Statement to Deposit Account No. 06-1075. A duplicate copy of this Statement is transmitted herewith.

Applicants further request that the cited documents be (1) fully considered by the Examiner during the course of examination of this application, and (2) printed on any patent



issuing from this application. Additionally, applicants request that a copy of Form PTO-1449, as considered and initialed by the Examiner, be returned with the next communication.

Respectfully submitted,

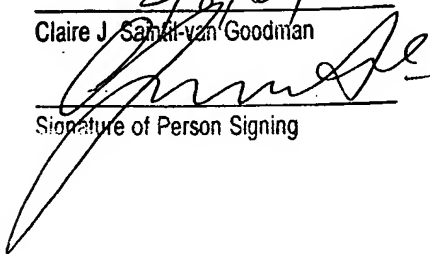


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FORM PTO-1449

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.  
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STATEMENT BY APPLICANTAPPLICANT  
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## UNITED STATES. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLAS S	FILING DATE IF APPROPRIATE
	4,517,295	05/14/85	Bracke et al.	435	101	
	4,582,865	04/15/86	Balazs et al.	524	29	
	4,703,108	10/27/87	Silver et al.	530	356	
	4,713,448	12/15/87	Balazs et al.	536	55.1	
	4,780,414	10/25/88	Nimrod et al.	435	101	
	4,784,659	11/15/88	Fleckenstein et al.	623	1	
	4,801,539	01/31/89	Akasaka et al.	435	101	
	4,897,349	01/30/90	Swann et al.	435	101	
	4,957,744	09/18/90	della Valle et al.	424	401	
	4,970,298	11/13/90	Silver et al.	530	356	
	5,017,229	05/21/91	Burns et al.	106	162	
	5,166,331	11/24/92	della Valle et al.	536	55.1	
	5,270,300	12/14/93	Hunziker	514	12	
	5,316,926	05/31/94	Brown et al.	435	101	
	5,336,767	08/09/94	della Valle et al.	536	55.1	
	5,356,883	10/18/94	Kuo et al.	514	54	
	5,368,858	11/29/94	Hunziker	424	423	
	5,413,791	05/09/95	Rhee et al.	424	422	
	5,466,462	11/14/95	Rosenthal et al.	424	426	
	5,468,787	11/21/95	Braden et al.	523	113	
	5,502,081	03/26/96	Kuo et al.	514	777	
	5,512,301	04/30/96	Song et al.	424	484	
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## FOREIGN PATENT DOCUMENTS

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						YES	NO
	WO 90/06767	06/28/90	PCT	A61K	37/02		
	WO 96/15888	05/30/96	PCT	B28B3	00		
	WO 97/45532	12/04/97	PCT	C12N	5/00		
	WO 97/18244	5/22/97	PCT	C08B	37/08		
	FR 96 12200	10/07/96	France				

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

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	Homminga et al., "Perichondral grafting for cartilage lesions of the knee," <i>J. Bone Joint Surg.</i> , 72-B, pp. 1003-1007 (1990).
	Homminga et al., "Repair of articular defects by perichondrial grafts: Experiments in the rabbit," <i>Acta Orthop. Scand.</i> , pp. 326-329 (1989).
	Hunziker and Rosenberg, "Repair of Partial-Thickness Defects in Articular Cartilage: Cell Recruitment from the Synovial Membrane," <i>J. Bone Joint Surg.</i> , 78-A, pp. 721-733 (1996).
	Itay et al., "Use of Cultured Embryonal Chick Epiphyseal Chondrocytes as Grafts for Defects in Chick Articular Cartilage," <i>Clin. Orthop.</i> , 220, pp. 284-303 (1987).
	Kalb and Cowley, "Hope for Damaged Joints," <i>Newsweek</i> , p. 55, January 29, 1996.
	King et al., "Beneficial actions of exogenous hyaluronic acid on wound healing," <i>Surgery</i> , 109, pp. 76-84 (1991).
	Knudson, C.B., "Hyaluronan Receptor-directed Assembly of Chondrocyte Pericellular Matrix," <i>J. Cell Biol.</i> , 120, pp. 825-834 (1993).
	Knudson and Knudson, "Hyaluronan-binding proteins in development, tissue homeostasis, and disease," <i>FASEB J.</i> , 7, pp. 1233-1241 (1993).
	Kuettner et al., "Synthesis of Cartilage Matrix by Mammalian Chondrocytes in vitro. I. Isolation, Culture Characteristics, and Morphology," <i>J. Cell Biol.</i> , 93, pp. 743-750 (1982).
	Kuò et al., "Chemical Modification of Hyaluronic Acid by Carbodiimides," <i>Bioconjugate Chem.</i> , 2, pp. 232-241 (1991).
	Kurzer and Douraghi-Zadeh, "Advances in the Chemistry of Carbodiimides," <i>Chem. Rev.</i> , 67, pp. 107-152 (1967).
	Kvam et al., "Purification and Characterization of Hyaluronan from Synovial Fluid," <i>Anal. Biochem.</i> , 211, pp. 44-49 (1993).
	Larsen, N.E., "Management of adhesion formation and soft tissue augmentation with viscoelastics: hyaluronan derivatives," in <i>The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives</i> , T.C. Laurent (ed.), Portland Press, London, pp. 267-281 (1998).

EXAMINER

DATE CONSIDERED

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## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER INITIAL	
	Larsen and Balazs, "Drug delivery systems using hyaluronan and its derivatives," <i>Adv. Drug Delivery Rev.</i> , 7, pp. 279-293 (1991).
	Laurencin et al., "Poly(anhydride) administration in high doses in vivo: Studies of biocompatibility and toxicology," <i>J. Biomed. Mat. Res.</i> , 24, pp. 1463-1481 (1990).
	Laurent and Fraser, "Hyaluronan," <i>FASEB J.</i> , 6, pp. 2397-2404 (1992).
	Maleski and Knudson, "Hyaluronan-Mediated Aggregation of Limb Bud Mesenchyme and Mesenchymal Condensation during Chondrogenesis," <i>Exp. Cell Res.</i> , 225, pp. 55-66 (1996).
	McPherson et al., "Collagen Fibrillogenesis In Vitro: A Characterization of Fibril Quality as a Function of Assembly Conditions," <i>Collagen Rel. Res.</i> , 5, pp. 119-135 (1985).
	Morgelin et al., "The cartilage proteoglycan aggregate: assembly through combined protein-carbohydrate and protein-protein interactions," <i>Biophys. Chem.</i> , 50, pp. 113-128 (1994).
	Nakahara et al., "Culture-Expanded Periosteal-Derived Cells Exhibit Osteochondrogenic Potential in Porous Calcium Phosphate Ceramics In Vivo," <i>Clin. Orthop.</i> , 276, pp. 291-298 (1992).
	Noble et al., "Induction of inflammatory gene expression by low-molecular-weight hyaluronan fragments in macrophages," in <i>The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives</i> , T.C. Laurent (ed), Portland Press, London, pp. 219-225 (1998).
	O'Driscoll et al., "Durability of Regenerated Articular Cartilage Produced by Free Autogenous Periosteal Grafts in Major Full-Thickness Defects in Joint Surfaces under the Influence of Continuous Passive Motion," <i>J. Bone Joint Surg.</i> , 70-A, pp. 595-606 (1988).
	Ogamo et al., "Preparation and properties of fluorescent glycosamino-glycuronans labeled with 5-aminofluorescein," <i>Carbohydr. Res.</i> , 105, pp. 69-85 (1982).
	Parameswaran et al., "Labeling of $\epsilon$ -lysine cross-linking sites in proteins with peptide substrates of factor XIIIa and transglutaminase," <i>Proc. Natl. Acad. Sci. U.S.A.</i> , 87, pp. 8472-8475 (1990).
	Pouyani et al., "Functionalized Derivatives of Hyaluronic Acid Oligosaccharides: Drug Carriers and Novel Biomaterials," <i>Bioconjugate Chem.</i> , 5, pp. 339-347 (1994).
	Prestwich et al., "Chemical modification of hyaluronic acid for drug delivery, biomaterials and biochemical probes," in <i>The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives</i> , T.C. Laurent (ed), Portland Press, London, pp. 43-65 (1998).
	Richards and Knowles, "Glutaraldehyde as a Protein Cross-linking Reagent," <i>J. Mol. Biol.</i> , 37, pp. 231-233 (1968).

EXAMINER

DATE CONSIDERED

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## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER INITIAL	
	Robinson et al., "Regenerating Hyaline Cartilage in Articular Defects of Old Chickens Using Implants of Embryonal Chick Chondrocytes Embedded in a New Natural Delivery Substance," <i>Calcif. Tissue Int.</i> , 46, pp. 246-253 (1990).
	Sampath et al., "Recombinant Human Osteogenic Protein-1 (hOP-1) Induces New Bone Formation in Vivo with a Specific Activity Comparable with Natural Bovine Osteogenic Protein and Stimulates Osteoblast Proliferation and Differentiation in Vitro," <i>J. Biol. Chem.</i> , 267, pp. 20352-20362 (1992).
	Scott, J.E., "Chemical morphology of hyaluronan," in <i>The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives</i> , T.C. Laurent (ed.), Portland Press, London, pp. 7-15 (1998).
	Sheng et al., "A Specific Quantitative Colorimetric Assay for L-Asparagine," <i>Anal. Biochem.</i> , 211, 242-249 (1993).
	Shortkroff et al., "Healing of chondral and osteochondral defects in a canine model: the role of cultured chondrocytes in regeneration of articular cartilage," <i>Biomaterials</i> , 17, pp. 147-154 (1996).
	Strachan et al., "Hyaluronate in rheumatology and orthopaedics: Is there a role?" <i>Ann. Rheum. Dis.</i> , 49, 949-952 (1990).
	Vercruysse et al., "Synthesis and in vitro Degradation of New Polyvalent Hydrazide Cross-Linked Hydrogels of Hyaluronic Acid," <i>Bioconjugate Chem.</i> , 8, pp. 686-694 (1997).
	Vilaseca et al., "Protein Conjugates of Defined Structure: Synthesis and Use of a New Carrier Molecule," <i>Bioconjugate Chem.</i> , 4, pp. 515-520 (1993).
	Wakitani et al., "Mesenchymal Cell-Based Repair of Large, Full-Thickness Defects of Articular Cartilage," <i>J. Bone Joint Surg.</i> , 76-A, pp. 579-592 (1994).
	Wakitani et al., "Repair of rabbit articular surfaces with allograft chondrocytes embedded in collagen gel," <i>J. Bone Joint Surg.</i> , 71-B, pp. 74-80 (1989).
	Wang et al., "Recombinant human bone morphogenetic protein induces bone formation," <i>Proc. Natl. Acad. Sci. U.S.A.</i> , 87, pp. 2220-2224 (1990).
	Weiss, C., "Viscoseparation and viscoprotection as therapeutic modalities in the musculoskeletal system," in <i>The Chemistry, Biology and Medical Applications of Hyaluronan and Its Derivatives</i> , T.C. Laurent (ed.), Portland Press, London, pp. 255-265 (1998).
	Wong, S.S., "Chemistry of protein conjugation and crosslinking," CRC Press, Inc., Boca Raton, FL, p. 27 (1993).
	Yang and Moses, "Transforming Growth Factor $\beta$ 1-induced Changes in Cell Migration, Proliferation, and Angiogenesis in the Chicken Chorioallantoic Membrane," <i>J. Cell Biol.</i> , 111, pp. 731-741 (1990).

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